

Claims

- [c1] 1.A method of recycling polycarbonate resin waste, comprising
subjecting a polycarbonate waste component to one or both of a transesterification reaction and a polycondensation reaction, wherein the polycarbonate waste component has an OH group concentration and comprises polycarbonate resin waste; and
adjusting the OH group concentration of the polycarbonate waste component.
- [c2] 2.The recycling method of Claim 1, wherein the OH group concentration is adjusted before being subjected to either of the transesterification reaction or the polycondensation reaction.
- [c3] 3.The recycling method of Claim 2, wherein the polycarbonate waste component further comprises polycarbonate oligomer.
- [c4] 4.The recycling method of Claim 1, wherein the OH group concentration is adjusted during the transesterification reaction.

- [c5] 5.The recycling method of Claim 1, wherein the OH group concentration is adjusted during the polycondensation reaction.
- [c6] 6.The recycling method of Claim 1, wherein the OH group concentration is a terminal OH group concentration.
- [c7] 7.The recycling method of Claim 1, further comprising introducing the polycarbonate waste component and a material to a prepolymerization tank, wherein the material is selected from the group consisting of a dihydroxy compound, a carbonate diester, reaction products of a dihydroxy compound and a carbonate diester, and combinations comprising at least one of the foregoing materials.
- [c8] 8.The recycling method of Claim 1, wherein the polycarbonate waste component comprises an aromatic polycarbonate comprising bisphenol-A.
- [c9] 9.The recycling method of Claim 1, wherein adjusting the OH group concentration comprises adding a terminal regulator during one or both of the transesterification and polycondensation reactions.
- [c10] 10.The recycling method of Claim 9, wherein the terminal regulator comprises an aromatic dihydroxy com-

pound.

- [c11] 11.The recycling method of Claim 10, wherein the aromatic dihydroxy compound comprises bisphenol-A.
- [c12] 12.The recycling method of Claim 1, wherein the OH concentration is about 200 to about 25,000 ppm per unit weight of the polycarbonate waste component.
- [c13] 13.The recycling method of Claim 12, wherein the OH concentration is about 500 to about 20,000 ppm per unit weight of the polycarbonate waste component.
- [c14] 14.The recycling method of Claim 13, wherein the OH concentration is about 500 to about 10,000 ppm per unit weight of the polycarbonate waste component.
- [c15] 15.The recycling method of Claim 1, which results in a polycarbonate product having an intrinsic viscosity of 0.1 to 1.0 dl/g.
- [c16] 16.A method of recycling polycarbonate resin waste, comprising:
introducing a dihydroxy compound and a carbonate diester to a mixing tank to form a mixing tank composition;
directing the mixing tank composition to a prepolymerization tank to form a prepolymerization composition;

melting a polycarbonate waste component, wherein the polycarbonate waste component has an OH group concentration and comprises polycarbonate resin waste; combining the prepolymerization composition with the melted polycarbonate waste component to form a combination;
adjusting the OH group concentration of the polycarbonate waste component;
polymerizing the combination to form a polycarbonate product; and
extruding the polycarbonate product.

[c17] 17.The recycling method of Claim 16, wherein the OH group concentration is adjusted before polymerizing the combination.

[c18] 18.The recycling method of Claim 16, wherein the OH group concentration is adjusted before combining the prepolymerization composition with the melted polycarbonate waste component.

[c19] 19.The recycling method of Claim 16, wherein the polycarbonate waste component further comprises polycarbonate oligomer.

[c20] 20.The recycling method of Claim 16, comprising adjusting the OH group concentration while polymerizing

the combination.

- [c21] 21.The recycling method of Claim 20, wherein adjusting the OH group concentration further comprises adding a terminal regulator.
- [c22] 22.The recycling method of Claim 20, wherein the terminal regulator comprises an aromatic dihydroxy compound.
- [c23] 23.The recycling method of Claim 21, wherein the aromatic dihydroxy compound comprises bisphenol-A.
- [c24] 24.The recycling method of Claim 16, wherein the OH concentration is about 200 to about 25,000 ppm per unit weight of the polycarbonate waste component.
- [c25] 25.The recycling method of Claim 24, wherein the OH concentration is about 500 to about 20,000 ppm per unit weight of the polycarbonate waste component.
- [c26] 26.The recycling method of Claim 25, wherein the OH concentration wherein the OH concentration is about 500 to about 10,000 ppm per unit weight of the polycarbonate waste component.
- [c27] 27.The recycling method of Claim 16, wherein adjusting the OH group concentration comprises controlling the amount of polycarbonate waste component combined

with the prepolymerization composition.